

$$4. a) \left[\frac{x}{2} + \frac{x}{3} = 5 \right] \cdot (3 \cdot 2)$$

$$\frac{x}{2} (3 \cdot 2) + \frac{x}{3} (3 \cdot 2) = 5 (3 \cdot 2)$$

$$3x + 2x = 5(3 \cdot 2)$$

$$5x = 30$$

$$x = 6 \checkmark$$

$$i) \left[\frac{x+2}{4} - \frac{x-1}{2} = \frac{2}{3} \right] 12 \leftarrow$$

$$3(x+2) - 6(x-1) = 4(2) \leftarrow$$

$$3x + 6 - 6x + 6 = 8$$

$$-3x + 12 = 8$$

$$-3x = -4$$

$$x = 4/3$$

algebra

$$5. \quad a) \left[\frac{5}{3x} - \frac{1}{9} = \frac{4}{x} \right] \cdot 9x \quad x \neq 0$$

$$5(3) - 1x = 4(9)$$

$$15 - x = 36$$

$$-21 = x \quad \checkmark$$

$$e) \left[\frac{2}{\cancel{z+5}} + \frac{20}{z^2-25} = \frac{\cancel{+3}}{\cancel{z-5}} \right] \cdot (z+5)(z-5) \quad z \neq \pm 5$$

$$2(z-5) + 20 = 3(z+5)$$

$$2z - 10 + 20 = 3z + 15$$

$$\cancel{-5} = z \quad \text{no solution}$$

$$5. \quad u)$$

$$\left[\frac{x}{x-3} + \frac{1}{x-2} - \frac{1}{x+2} = \frac{x-12}{\begin{array}{l} x^3 - 3x^2 - 4x + 12 \\ x^2(x-3) - 4(x-3) \\ (x-3)(x^2-4) \\ (x-3)(x+2)(x-2) \end{array}} \right] \cdot \frac{(x-3)(x+2)}{(x-2)}$$

$$\frac{(x^2-4)}{x} \cdot \frac{(x-3)(x+2)}{(x-2)} + \frac{1}{x-2} \cdot \frac{(x-3)(x+2)}{(x-2)} - \frac{1}{x+2} \cdot \frac{(x-3)(x+2)}{(x-2)} = x-12$$

$$x^3 - \cancel{4x} + \cancel{x^2} + \cancel{2x} - \cancel{3x} - \cancel{6} - \cancel{x^2} + \cancel{3x} + \cancel{2x} - \cancel{6} = x-12$$

$$x^3 - \cancel{12} = x - \cancel{12}$$

$$x^3 - x = \odot$$

$$x(x^2 - 1) = 0$$

$$x(x+1)(x-1) = 0$$

$$x = 0, \pm 1$$

$$x \neq 3, \pm 2$$

Applications

Number Questions (p. 91)

1. e) let 1st # be x
let 2nd # be $x+2$

$$\left[\frac{1}{x} + \frac{1}{x+2} = \frac{7}{24} \right] \quad 24(x)(x+2) \quad x \neq 0, -2$$

$$24(x+2) + 24x = 7x(x+2)$$

$$\underline{24x} + 48 + \underline{24x} = 7x^2 + 14x$$

$$0 = 7x^2 - 34x - 48$$

$$0 = (7x + 8)(x - 6)$$

$$x = \cancel{-8/7}, 6$$

not an integer

The numbers are 6 and 8.

consecutive #s

$x, x+1$

consecutive even #s
odd #s

$x, \textcircled{x+2}$

Work Problems (p. 92)

↳ amount of time it takes together + ... = 1
 " " " " alone

2. a)
$$\left[\frac{x}{4} + \frac{x}{5} = 1 \right]^{20}$$

$$5x + 4x = 20$$

$$9x = 20$$

$$x = 20/9 \text{ hrs.}$$

$$\text{Jane} = x$$

$$\text{Anna} = 2x$$

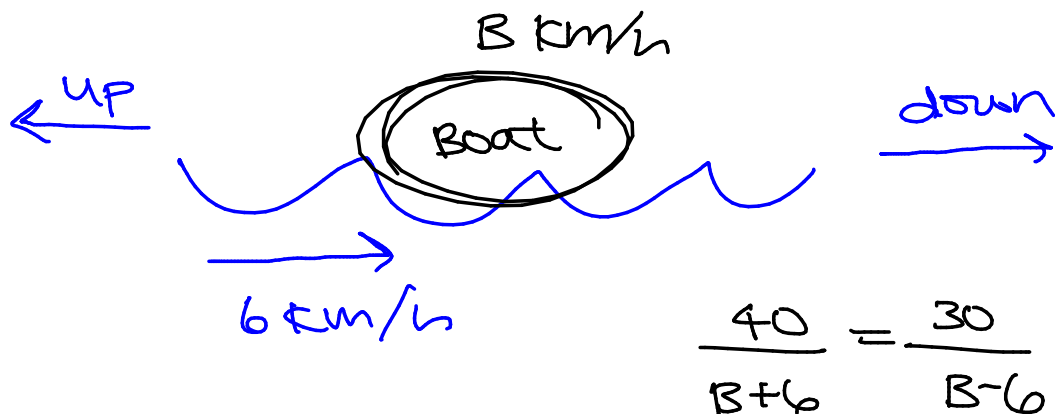
c)
$$\frac{15}{x} + \frac{15}{2x} = 1$$

Distance Problems (p. 93) $ST=D$ $T=\frac{D}{S}$

3. a)
$$S \times T = D$$

down	$B+6$	$\frac{40}{B+6}$	40
up	$B-6$	$\frac{30}{B-6}$	30

11 ← same



$$40(B-6) = 30(B+6)$$

$$40B - 240 = 30B + 180$$

$$10B = 420$$

$$B = 42 \text{ km/h}$$

e)	S	X	T	=	D
run	7		t		7t
					+
walks	3		2-t		3(2-t)
					<hr/>
					8

p. 85 → solving for a variable

6. e) $\left[4x + \frac{3}{y} = \frac{2}{z} \right]^{yz} \text{ for } y$

$$4x y z + 3z = 2y$$

$$4x y z - 2y = -3z$$

$$y(4xz - 2) = -3z$$

$$y = \frac{-3z}{4xz - 2}$$

1. (2) NP values
2. (6) $\times \div$ simplify
3. (8) $+-$ "
4. (8) solve \swarrow 2 marks each
5. (3) } word problems
6. (3) }

$$2. a) \frac{9(4-x^2)}{x^2-5x+6} = \frac{9(2+x)(2-x)}{(x-3)(x-2)}$$

$$b) \frac{(x^2+4y^2)(x^2-4y^2)}{(x-2y)(x+2y)}$$

$$3. \frac{(x-3)(x-4)}{x}$$

$$b) \frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c}$$

$$4. a) \frac{5(x+s)}{x^2-2s} + \frac{4(x-s)}{x^2+10x+2s} = \frac{5x+2s+4x-2s}{(x+s)(x+s)(x-s)} = \frac{9x+s}{(x+s)^2(x-s)}$$

$\frac{5(x+s) + 4(x-s)}{(x+s)(x+s)(x-s)}$

$\frac{10x+s}{(x+s)^2(x-s)}$

$$b) \frac{6}{r-4} + \frac{\cancel{r+s}}{\frac{4-r}{r-4}} = \frac{6-r-s}{r-4} \quad \text{E.F.}$$

5.